

CLAIMS:

1 1. A machine for depositing a film on a roll that can be used as a
2 rotogravure printing medium, comprising:

3 a carriage for rotatably holding said roll;

4 a rotary driver for rotating said roll;

5 a linear driver for moving said carriage downstream along a processing
6 path in order to move said roll axially; and

7 a coating head having an orifice in communication with a source of
8 composition for dispensing said composition onto said roll as a merging series
9 of adjacent, self-leveling strip or bead portions.

1 2. A machine according to claim 1 comprising:

2 curing means for (a) initially curing said composition film with an energy
3 source at a primary energy flux density, and (b) secondarily curing said
4 composition film with an energy source at a secondary energy flux density that
5 is greater than said primary energy flux density.

1 3. A machine according to claim 2 wherein said linear driver is operable
2 to move said carriage along said processing path from said coating head to said
3 curing means.

1 4. A machine according to claim 1 wherein said linear and said rotary
2 driver are linked to work at dependent, proportional speeds.

1 5. A machine according to claim 1 comprising:

2 a heater positioned in proximity to said coating head in a position to heat
3 said roll before receiving said composition from said coating head.

1 6. A machine according to claim 5 wherein said heater is elongate, and

2 straddles and extends upstream of said coating head, so that said roll is
3 preheated before and heated at said coating head.

1 7. A machine according to claim 6 comprising:
2 an infrared sensor coupled to said heater and located along said
3 processing path to sense temperature of said roll and thermostatically regulate
4 said heater.

1 8. A machine according to claim 5 wherein said linear driver is operable
2 to move said carriage alongside said heater to said coating head.

1 9. A machine according to claim 5 comprising:
2 a primary curing station for initially curing said composition film with an
3 energy source at a primary energy flux density, said linear driver being operable
4 to move said carriage along said processing path from said heater, past said
5 coating head to said primary curing station.

1 10. A machine according to claim 9 comprising:
2 a secondary curing station for secondarily curing said composition film
3 with an energy source at a secondary energy flux density that is greater than
4 said primary energy flux density, said linear driver being operable to move said
5 carriage along said processing path from said heater, past said coating head and
6 said primary curing station to said secondary curing station.

1 11. A machine according to claim 1 comprising:
2 a metering pump coupled to said source of composition for urging said
3 composition through said orifice.

1 12. A machine according to claim 11 wherein said pump is driven in
2 dependence on and in proportion to the angular speed of said rotary driver.

1 13. A machine according to claim 11 comprising:
2 a controller coupled to said either one of said rotary driver or said linear
3 driver for sensing its operating speed, said controller being operable to drive said
4 pump to operate in dependence on and in proportion to the operating speed,
5 said controller being operable to adjust the proportionality between the speed
6 of said pump and said operating speed.

1 14. A machine according to claim 11 comprising:
2 a source of compressed gas coupled to said source of composition for
3 urging said composition through said metering pump.

1 15. A machine according to claim 1 wherein said coating head is
2 adjustable to move said orifice along a discrete adjustment path that is radial
3 relative to said roll.

1 16. A machine according to claim 15 wherein said adjustment path
2 extends at an acute angle to vertical.

1 17. A machine according to claim 15 wherein said coating head has a
2 tubular needle, said coating head having discrete adjustments to adjust the pitch
3 and roll of said tubular needle.

1 18. A machine according to claim 1 wherein said coating head
2 comprises:
3 a slider that is linearly adjustable to move said orifice along an adjustment
4 path that is radial relative to said roll.

1 19. A machine according to claim 1 wherein said coating head
2 comprises:

3 a heater element for heating composition flowing through said coating
4 head.

1 20. A machine according to claim 19 wherein said coating head
2 comprises:

3 a temperature sensor for sensing the temperature of said composition in
4 said coating head and thermostatically controlling said heater element.

1 21. A machine according to claim 1 comprising:

2 a filter between said source of composition and said orifice for filtering
3 said composition.

1 22. A machine according to claim 1 wherein said coating head
2 comprises:

3 a filter for filtering said composition.

1 23. A machine according to claim 22 wherein said coating head
2 comprises:

3 a pressure sensor for sensing and displaying information about the
4 pressure of said composition in said coating head.

1 24. A machine according to claim 1 wherein said rotary driver
2 comprises:

3 a drum extending axially along said processing path, said carriage having
4 a bearer for bearing on said drum, said bearer being arranged to be driven by
5 said drum in order to rotate said roll.

1 25. A machine according to claim 24 wherein said bearer comprises:

2 a bearer wheel rotatably mounted on said carriage to be driven by said
3 drum in order to rotate said roll.

1 26. A machine according to claim 24 wherein said carriage comprises:
2 a pair of end supports independently riding on said drum, so that the
3 spacing between said end supports is alterable to accommodate said roll.

1 27. A machine according to claim 26 wherein said bearer comprises:
2 a pair of bearer wheels rotatably mounted on different corresponding ones
3 of said end supports to be driven by said drum in order to rotate said roll, said
4 carriage being at least partially supported by said bearer wheels.

1 28. A machine according to claim 27 comprising:
2 a beam extending along said processing path, each of said end supports
3 having a linear bearing riding said beam, said linear bearing being on an opposite
4 side of said processing path than said bearer.

1 29. A machine according to claim 28 wherein said linear driver
2 comprises:
3 a lead screw, said carriage having a nut releasably connected to said lead
4 screw.

1 30. A machine according to claim 26 wherein each of said end supports
2 comprises:
3 a spaced pair of gibs, said roll having on each end a sheave sized to fit
4 between said gibs.

1 31. A machine according to claim 30 including an auxiliary rail located
2 alongside said processing path, said carriage comprising:
3 a retractable lift wheel sized to ride on said auxiliary rail and lift said
4 bearer, said lift wheel being manually retractable to place said bearer on said
5 drum.

1 32. A machine according to claim 1 comprising:
2 a source of ionized air located upstream of said coating head for directing
3 ionized air at the roll.

1 33. A machine according to claim 32 comprising:
2 a vacuum cleaner located between said source of ionized air and said
3 coating head for removing particles from said roll.

1 34. A machine for depositing a film on a member that can be used as
2 a rotogravure printing medium, comprising:
3 a carriage for holding said member;
4 a coating head for dispensing a composition onto said member;
5 curing means for (a) initially curing said composition film with an energy
6 source at a primary energy flux density, and (b) secondarily curing said
7 composition film with an energy source at a secondary energy flux density that
8 is greater than said primary energy flux density.

1 35. A machine according to claim 34 wherein said curing means
2 comprises:
3 a primary curing station for initially curing said composition film with an
4 energy source at the primary energy flux density, said carriage being movable
5 along a processing path past said coating head to said primary curing station.

1 36. A machine according to claim 35 comprising:
2 a secondary curing station for secondarily curing said composition film
3 with an energy source at a secondary energy flux density that is greater than
4 said primary energy flux density, said carriage being movable along said
5 processing path past said coating head and said primary curing station to said
6 secondary curing station.

2 a roll in order to make a rotogravure printing medium which includes a film
3 coating that is selectively alterable to produce ink-retaining cells, wherein the
4 method comprises the steps of:

5 positioning said roll at said coating head in order to dispense said
6 composition onto said roll with said coating head;

7 rotating said roll about its axis while translating said roll axially past said
8 coating head; and

9 helically dispensing said composition onto said roll as a merging series of
10 adjacent, self-leveling strip or bead portions, the adjacent strip or bead portions
11 merging and self-leveling at and after deposition to produce a uniform,
12 continuous coating of the plastic composition.

1 42. A method according to claim 41 comprising the steps of:

2 moving said roll away from said coating head;

3 initially curing said composition film with an energy source at a primary
4 energy flux density; and

5 secondarily curing said composition film with an energy source at a
6 secondary energy flux density that is greater than said primary energy flux
7 density.

1 43. A method according to claim 41 comprising the step of:

2 heating said roll before depositing said composition from said coating
3 head.

1 44. A method according to claim 43 comprising the step of:

2 continuing heating of said roll at said coating head.

1 45. A method according to claim 43 comprising:

2 moving said roll along a processing path past said coating head; and

3 initially curing said composition film with an energy source at a primary

1 37. A method of making a rotogravure printing medium which includes
2 a member with a film coating that is selectively alterable to produce ink-
3 retaining cells, wherein the method comprises the steps of:

4 depositing on the surface of the member a composition film of irreversibly
5 curable plastic composition which is engraveable after curing to produce ink-
6 retaining cells;

7 initially curing said composition film with an energy source at a primary
8 energy flux density; and

9 secondarily curing said composition film with an energy source at a
10 secondary energy flux density that is greater than said primary energy flux
11 density.

1 38. A method according to claim 37 wherein the step of depositing the
2 coating is performed by:

3 depositing on the surface of the member a series of adjacent strip or bead
4 portions of a self-leveling, irreversibly curable plastic composition which is
5 engraveable after curing to produce ink-retaining cells, the adjacent strip or bead
6 portions merging and self-leveling at and after deposition to produce a uniform,
7 continuous coating of the plastic composition.

1 39. A method according to claim 37 wherein the step of initially curing
2 is performed with said primary flux density at a magnitude sized to partially cure
3 said composition film without surficially dimpling the composition film.

1 40. A method according to claim 39 wherein the step of initially curing
2 is performed with said primary flux density at a magnitude sized to avoid
3 forming a relatively hard shell upon the composition film.

1 41. A method employing a coating head for dispensing a composition on

4 energy flux density.

1 46. A method according to claim 41 comprising the step of:
2 adjusting the proportionality between the flow rate of the composition
3 through said coating head and the angular speed of said roll.

1 47. A method according to claim 41 comprising the step of:
2 moving said coating head along a discrete adjustment path that is radial
3 relative to said roll to adjust for roll size.

1 48. A method according to claim 47 wherein said adjustment path
2 extends at an acute angle to vertical.

1 49. A method according to claim 47 wherein said coating head has a
2 tubular needle, the method including the steps of:
3 discretely adjusting the pitch and roll of said tubular needle.

1 50. A method according to claim 41 comprising the step of:
2 heating the composition flowing through said coating head.

1 51. A method according to claim 50 comprising the step of:
2 sensing and thermostatically controlling the temperature of said
3 composition in said coating head.

1 52. A method according to claim 41 comprising the step of:
2 filtering the composition before passing it out of said coating head.

1 53. A method according to claim 52 comprising the step of:
2 sensing and displaying information about the pressure of said composition
3 in said coating head.

1 54. A method according to claim 41 comprising the step of:
2 directing a stream of ionized air on said roll before depositing said
3 composition on said roll.

1 55. A method according to claim 54 comprising the step of:
2 vacuum cleaning said roll after treatment by the ionized air and before
3 depositing said composition on said roll.